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EXAMINER

DANG, KET D

ART UNIT	PAPER NUMBER
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3742

NOTIFICATION DATE	DELIVERY MODE
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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/567,075	Applicant(s) HACKBARTH ET AL.	
	Examiner KET D. DANG	Art Unit 3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-51 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18-51 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2011 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment/Arguments

1. Applicant's arguments with respect to claim 34 have been considered but are moot in view of the new ground(s) of rejection.

This office action is responsive to the amendment filed on March 31, 2011. As directed by the amendment: claims 18, 22, 31, 34-36, 38, 45-47, 50, and 51 have been amended, claims 1-17 have been cancelled and no new claims have been added. Thus, claims 18-51 are presently pending in this application.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 23-26, 31-33, and 46-49 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 23-26, recites the limitation "the core elements" in the claims. There is insufficient antecedent basis for this limitation in the claim. It is unclear and indefinite to the relationship between "the core elements" and "a plurality of separate core elements" in the preceding claim and to whether they are the same or different. Further clarification is required to either further differentiate (the core elements) or provide proper antecedent basis.

Regarding claim 31, recites the limitation "a first number of the core elements" at line 2 in the claim. It is unclear and indefinite to the relationship between "a first number of the core elements" and "a plurality of separate core elements" in the preceding claim and to whether they are the same or different. Further clarification is required to further differentiate between the two limitations. The limitations "the second number" and "the first number" at line 5 in the claim, respectively, there are insufficient antecedent basis for these limitations in the claim. It is unclear and indefinite to the relationship between "the second number", "the first number" and "a second number of heating conductors", "a first number of the core elements", respectively, and to whether they are the same or different. Further clarification is required to either further differentiate (the second number and the first number) or provide proper antecedent basis.

Regarding claim 32, recites the limitation "at least two heating conductor" at lines 1-2 in the claim. It is unclear and indefinite to the relationship between "at least two heating conductor" and "a second number of heating conductors" in the preceding claim and to whether they are the same or different. Further clarification is required to further differentiate the limitations.

Claims 35-36 recite the limitation "a device" at line 2 renders the claim indefinite. It is unclear for whether this device is the same as the one recited at line 1 in the preamble. If it is so, then "a" should be replaced with "the" or "said". If it is not, then essential structural cooperative relationships between the two are suggested.

Regarding claim 46, recites the limitation "the combination" at line 1 in the preamble of the claim. There is insufficient antecedent basis for this limitation in the

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claim. It is unclear and indefinite to the relationship between “the combination” and “a cooking combination” in the preceding claim and to whether they are the same or different. Further clarification is required to either further differentiate (the combination) or provide proper antecedent basis.

Regarding claim 47, recites the limitation “a first number of the core elements” at line 2 in the claim. It is unclear and indefinite to the relationship between “a first number of the core elements” and “a plurality of separate core elements” in the preceding claim and to whether they are the same or different. Further clarification is required to further differentiate between the two limitations. The limitations “the second number” and “the first number” at line 5 in the claim, respectively, there are insufficient antecedent basis for these limitations in the claim. It is unclear and indefinite to the relationship between “the second number”, “the first number” and “a second number of heating conductors”, “a first number of the core elements”, respectively, and to whether they are the same or different. Further clarification is required to either further differentiate (the second number and the first number) or provide proper antecedent basis.

Regarding claim 48, recites the limitation “at least two heating conductor” at line 2 in the claim. It is unclear and indefinite to the relationship between “at least two heating conductor” and “a second number of heating conductors” and to whether they are the same or different. Further clarification is required to further differentiate limitations

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 18-20, 30, 36, and 50 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al. (US 6281611 B1).

Regarding claim 18, Chen et al. discloses a device for heating food by means of induction (abstract), comprising: heating means including a secondary winding 137 (fig. 2) formed from a current conductor (i.e. the eddy current) and a heating element (see figure 2) fixed to said secondary winding 137 (fig. 2); a winding core 134 (fig. 2) disposed inside said secondary winding 137 (fig. 2) (col. 3, lines 66 – col. 4, lines 33; col. 5, lines 9-28).

With respect to claim 19, Chen et al. discloses wherein a winding core 134 (fig. 2) is substantially rotationally symmetrical (as seen in figure 2, i.e. the winding core (134) is aligned with the base (20) and the permanent magnet (42)) for uniform heating distribution and that the container (30) can rotate to align with the base (20)).

With respect to claim 20, Chen et al. discloses wherein a winding core 134 (fig. 2) being configured as a pot core (i.e. the same configuration as applicant's figure 8, reference number (74)).

With respect to claim 30, Chen et al. discloses wherein the secondary winding 137 (fig. 2) is substantially spiral-shaped (i.e. the wire coil (137) wraps around the core (134)).

With respect to claim 36, Chen et al. discloses a device for transmitting energy to a device for heating food by means of induction (abstract), comprising: a primary winding 137 (fig. 2) formed a current conductor (i.e. the eddy current) and connected to a voltage source 24 (fig. 1); and a winding core 134 (fig. 2) located inside the primary winding 137 (fig. 2), wherein the winding core 137 (fig. 2) is configured as a pot core (i.e. the winding core (137) has the same definition/configuration as applicant's figure 8, reference number (74)) (col. 3, lines 66 – col. 4, lines 33; col. 5, lines 9-28).

Regarding claim 50, Chen et al. discloses a device for heating food by induction (abstract), the device comprising: a container 30 (fig. 1) for containing the food to be heated; and a heating section 29 (fig. 1) fixed to the container 30 (fig. 1) and having a secondary winding 137 (fig. 2) formed from a current conductor 132 (fig. 2) or 31 (fig. 1); a winding core 134 (fig. 2) having an outer wall, an inner wall, (as seen in figure 2, not labeled) and a base 136 (fig. 2, i.e. the faces (136) or the base of the core (134) spaced apart so that they will aligned with the spacing between the north and south poles of the permanent magnet (42)) connecting the outer wall and the inner wall such that the outer wall, inner wall and base form a trough in which the secondary winding 137 (fig. 2) is positioned, a heating element (col. 5, lines 22-29) electrically connected to the secondary winding 137 (fig. 2) and position adjacent to the container 30 (fig. 1), wherein the outer wall and the inner wall are substantially circular (as seen in figure 2 for the

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walls of core (134), not labeled) and are arranged concentrically (i.e. the container (30) and the base (20) are concentrically aligned together as seen in figure 2).

6. Claim 36 is rejected under 35 U.S.C. 102(b) as being anticipated by Schroeder (US 3530499).

Regarding claim 36, Schroeder discloses a device for transmitting energy to a device for heating food by means of induction (abstract), comprising: a primary winding 14 (fig. 4) formed from a current conductor and connected to a voltage source L1/L2 (fig. 4); and a winding core 13 (fig. 4) located inside the primary winding 14 (fig. 4), wherein the winding core 13 (fig. 4) is configured as a pot core (i.e. the winding core (13) has the same definition/configuration as applicant's figure 8, reference number (74)).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 21 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US 6281611 B1) in view of Hibino et al. (US 3928744) and Schroeder (US 3530499).

Chen et al. discloses all of the limitations of the claimed invention as set forth above, except for wherein the winding core includes a central column having the first axial height and an annular side wall having a second axial height different from the first axial height.

However, wherein the winding core includes a central column having the first axial height is known in the art. Hibino et al., for example, teaches wherein the winding core 60 (fig. 4) includes a central column 62 (fig. 4) having the first axial height (i.e. the central part of the winding core between the coils (61) and (63) as shown in figure 4). Hibino et al. further teaches such a configuration provides a means to permit the attainment of an especially high thermal efficiency while also preventing substantial noise and vibration due to a substantial reduction in the electromagnetic forces applied to the vessel (col. 1, lines 65-68).

Similarly, a second axial height different from the first axial height is known in the art. Schroeder, for example, teaches a second axial height different from the first axial height (col. 6, lines 57- 75). Schroeder further teaches such a configuration provides a corresponding flexibility in adaptability to energization of a plurality of different appliance units separately or simultaneously (col. 7, lines 46-48).

Therefore, it would have been obvious to one of ordinary skill in the art to modify Schroeder with the winding core includes a central column having the first axial height of Hibino et al. in order to permit the attainment of an especially high thermal efficiency while also preventing substantial noise and vibration due to a substantial reduction in the electromagnetic forces applied to the vessel. Similarly, it would have been obvious

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to one of ordinary skill in the art to modify Chen et al. in view of Hibino et al. with a second axial height different from the first axial height of Schroeder in order to provide a corresponding flexibility in adaptability to energization of a plurality of different appliance units separately or simultaneously.

9. Claims 22-23, 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US 6281611 B1) in view of Iguchi (US 5053593).

With respect to claim 28, Chen et al. discloses wherein the retaining 250 (fig. 8 or fig. 9, i.e. the base) means substantially ring-shaped (see figure 9).

Chen et al. discloses all of the limitations of the claimed invention as set forth above, except for wherein the winding core includes a plurality of separate core elements; wherein the core elements are arranged on a substantially circular path and configured substantially as circular-ring-segment-shaped; and retaining means which interconnect the core elements in a load-bearing manner.

However with respect to claim 22, wherein the winding core includes a plurality of separate core elements is known in the art. Iguchi, for example, teaches a plurality of separate core elements 3 (fig. 5, there are six of them) (abstract).

With respect to claim 23, Iguchi teaches wherein the core elements 3 (fig. 5) are arranged on a substantially circular path and configured substantially as circular-ring-segment-shaped (see figure 5).

With respect to claim 26, Iguchi teaches retaining means which interconnect the core elements 3 (fig. 5) in a load-bearing manner 10 (fig. 10).

Iguchi further teaches such a configuration provides a low-frequency electromagnetic induction heater which operates stably and safely due to inhibition of electromagnetic vibration by continuously attracting a heating the element to be heated (col. 2, lines 27-30). It would have been obvious to one of ordinary skill in the art to modify Chen et al. with wherein the winding core includes a plurality of separate core elements of Iguchi in order to provide a low-frequency electromagnetic induction heater which operates stably and safely due to inhibition of electromagnetic vibration by continuously attracting a heating the element to be heated.

10. Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US 6281611 B1) in view of Iguchi (US 5053593) as applied to claims 22-23, 26 and 28 above, and further in view of Hibino et al. (US 3928744).

Regarding claim 24 and 25, Chen et al. in view of Iguchi discloses all of the limitations of the claimed invention, except for wherein the core elements are substantial U-shaped in one radial cross-section; and wherein the core elements are substantial E-shaped in one radial cross-section.

However, wherein the core elements are substantial U-shaped in one radial cross-section; and wherein the core elements are substantial E-shaped in one radial cross-section are known in the art. Hibino et al., for example, teaches U-shaped core 60 (fig. 31) and E-shaped core 60 (fig. 30) (col. 4, lines 39-42). Hibino et al. further teaches such a configuration provides a means to permit the attainment of an especially high thermal efficiency while also preventing substantial noise and vibration due to a

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substantial reduction in the electromagnetic forces applied to the vessel (col. 1, lines 65-68). It would have been obvious to one of ordinary skill in the art to modify Chen et al. in view of Iguchi with wherein the core elements are substantial U-shaped in one radial cross-section; and wherein the core elements are substantial E-shaped in one radial cross-section of Hibino et al. in order to permit the attainment of an especially high thermal efficiency while also preventing substantial noise and vibration due to a substantial reduction in the electromagnetic forces applied to the vessel.

11. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US 6281611 B1) in view of Iguchi (US 5053593) as applied to claims 22-23, 26 and 28 above, and further in view of Akel et al. (US 6498325 B1).

Chen et al. in view of Iguchi discloses all of the limitations of the claimed invention, except for wherein the retaining means further comprises a printed circuit board.

However, wherein the retaining means further comprises a printed circuit board is known in the art. Akel et al., for example, teaches a printed circuit board 105 (fig. 9) (col. 5, lines 53 – col. 6, lines 17; col.10, lines 56 – col. 11, lines 32). Akel et al. further teaches such a configuration provides a means to facilitate manufacture of the induction-heated cooker hobs and improve the inductors modular nature at the stage when they are made (col. 5, lines 53-55). It would have been obvious to one of ordinary skill in the art to modify Chen et al. in view of Iguchi with wherein the retaining means further comprises a printed circuit board of Akel et al. in order to provide a means to

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facilitate manufacture of the induction-heated cooker hobs and improve the inductors modular nature at the stage when they are made.

12. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US 6281611 B1) in view of Akel et al. (US 6498325 B1).

Chen et al. discloses all of the limitations of the claimed invention, except for wherein the secondary is arranged on a printed circuit board.

However, wherein the secondary is arranged on a printed circuit board is known in the art. Akel et al., for example, teaches a printed circuit board 105 (fig. 9) (col. 5, lines 53 – col. 6, lines 17; col.10, lines 56 – col. 11, lines 32). Akel et al. further teaches such a configuration provides a means to facilitate manufacture of the induction-heated cooker hobs and improve the inductors modular nature at the stage when they are made (col. 5, lines 53-55). It would have been obvious to one of ordinary skill in the art to modify Chen et al. with wherein the secondary is arranged on a printed circuit board of Akel et al. in order to provide a means to facilitate manufacture of the induction-heated cooker hobs and improve the inductors modular nature at the stage when they are made.

13. Claims 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US 6281611 B1) in view of Iguchi (US 5053593) as applied to claims 22-23, 26 and 28 above, and further in view of Ose et al. (US Pub. No. US 20010019048 A1).

Chen et al. in view of Iguchi discloses all of the limitations of the claimed invention, except for wherein the winding core has a first number of the core elements, the heating element includes the a second number of heating conductors as and the second number equals the first number; wherein at least two heating conductors are arranged substantially symmetrically with respect to one another and in a substantially circular heating area; and wherein the heating conductors are arranged in a substantially circular heating area and each of the heating conductors is arranged substantially uniformly distributed in a piece-of-cake-shaped segment.

However, wherein the winding core has a first number of the core elements, the heating element includes the a second number of heating conductors as and the second number equals the first number; wherein at least two heating conductors are arranged substantially symmetrically with respect to one another and in a substantially circular heating area; and wherein the heating conductors are arranged in a substantially circular heating area and each of the heating conductors is arranged substantially uniformly distributed in a piece-of-cake-shaped segment are known in the art. Ose et al., for example, teaches the heating element includes the a second number of heating conductors 158 (fig. 10, i.e. six of them) as and the second number 158 (fig. 10, i.e. six of them) equals the first number (i.e. six core elements of Iguchi); wherein at least two heating conductors 158 (fig. 10, i.e. six of them) are arranged substantially symmetrically with respect to one another and in a substantially circular heating area (as seen in figure 10); and wherein the heating conductors 158 (fig. 10, i.e. six of them) are arranged in a substantially circular heating area and each of the heating conductors

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is arranged substantially uniformly distributed in a piece-of-cake-shaped segment (as see in figure 10, the heating conductors (158) are arranged substantially symmetrically with respect to one another and in a substantially circular heating area (11)) (abstract; see figure 10; para. 0010, 0090-0095). Ose et al. further teaches such a configuration provides a means to achieve a heating conductor which is defined with good control of the heatup characteristic (para. 0023). It would have been obvious to one of ordinary skill in the art to modify Chen et al. in view of Iguchi with the features above of Ose et al. in order to achieve a heating conductor which is defined with good control of the heatup characteristic.

14. Claim 34 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US 6281611 B1) in view of Schroeder (US 3530499).

Regarding claim 34, Chen et al. discloses a cooking combination comprising: a container 30 (fig. 2) for containing food to be heated, the container 30 (fig. 2) having a secondary winding core 134 (fig. 2) fixed to the container 30 (fig. 2), and a secondary winding 137 (fig. 2) wound around the secondary winding core 134 (fig. 2); and a device 24 (fig. 1) for transmitting energy to the container 30 (fig. 1) by means of induction,

Chen et al. discloses all of the limitations of the claimed invention as set forth above, except for a primary winding formed from a current conductor and connected to a voltage source; and a winding core located inside the primary winding.

However, a primary winding formed from a current conductor and connected to a voltage source; and a winding core located inside the primary winding is known in the

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art. Schroeder, for example, teaches a primary winding 14 (fig. 4) formed from a current conductor and connected to a voltage source L1/L2 (fig. 4); and a winding core 13 (fig. 4) located inside the primary winding 14 (fig. 4) (col. 5, lines 39-50).

With respect to claim 46, Schroeder teaches wherein the primary winding 14 (fig. 4) is substantially spiral-shaped (see figure 4, i.e. the coil (14) wraps around the core (13)).

Schroeder further teaches such a configuration provides a means corresponding flexibility in adaptability to energization of a plurality of different appliance units separately or simultaneously (col. 7, lines 46-48). It would have been obvious to one of ordinary skill in the art to modify Chen et al. with a primary winding formed from a current conductor and connected to a voltage source; and a winding core located inside the primary winding of Schroeder in order to provide a means corresponding flexibility in adaptability to energization of a plurality of different appliance units separately or simultaneously.

15. Claims 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schroeder (US 3530499) in view of Chen et al. (US 6281611 B1).

Regarding claim 35, Schroeder discloses a device for transmitting energy to a device for heating food by means of induction (abstract), comprising: a primary winding 14 (fig. 4) formed from a current conductor and connected to a voltage source L1/L2 (fig. 4); and a winding core 13 (fig. 4) located inside the primary winding 14 (fig. 4).

Schroeder discloses all of the limitations of the claimed invention as set forth above, except for wherein the winding core is substantially rotationally symmetrical.

However, wherein the winding core is substantially rotationally symmetrical is known in the art. Chen et al., for example, teaches wherein the winding core is substantially rotationally symmetrical (as seen in figure 2, i.e. the winding core (134) is aligned with the base (20) and the permanent magnet (42)) for uniform heating distribution and that the container (30) can rotate to align with the base (20)). It is known that such a configuration provides a means to uniform heating distribution. It would have been obvious to one of ordinary skill in the art to modify Schroeder with wherein the winding core is substantially rotationally symmetrical of Chen et al. in order to provide uniform heating distribution.

16. Claims 38-42, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schroeder (US 3530499) in view of Iguchi (US 5053593).

Regarding claim 38, Schroeder discloses a device for transmitting energy to a device for heating food by means of induction (abstract), comprising: a primary winding 14 (fig. 4) formed from a current conductor and connected to a voltage source L1/L2 (fig. 4); and a winding core 13 (fig. 4) located inside the primary winding 14 (fig. 4).

With respect to claim 44, Schroeder discloses retaining 26 (fig. 2) means substantially ring-shaped (see figure 2).

Schroeder discloses all of the limitations of the claimed invention as set forth above, except for wherein the winding core includes a plurality of separate core

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elements; wherein the core elements are arranged on a substantially circular path and configured substantially as circular-ring-segment-shaped; and retaining means which interconnect the core elements in a load-bearing manner; wherein the core elements are substantial U-shaped in one radial cross-section; and wherein the core elements are substantial E-shaped in one radial cross-section.

However, wherein the winding core includes a plurality of separate core elements is known in the art. Iguchi, for example, teaches a plurality of separate core elements 3 (fig. 5, there are six of them) (abstract).

With respect to claim 39, Iguchi teaches wherein the core elements 3 (fig. 5) are arranged on a substantially circular path and configured substantially as circular-ring-segment-shaped (see figure 5).

With respect to claim 42, Iguchi teaches retaining means which interconnect the core elements 3 (fig. 5) in a load-bearing manner 10 (fig. 10).

Iguchi further teaches such a configuration provides a low-frequency electromagnetic induction heater which operates stably and safely due to inhibition of electromagnetic vibration by continuously attracting a heating the element to be heated (col. 2, lines 27-30). It would have been obvious to one of ordinary skill in the art to modify Schroeder with wherein the winding core includes a plurality of separate core elements of Iguchi in order to provide a low-frequency electromagnetic induction heater which operates stably and safely due to inhibition of electromagnetic vibration by continuously attracting a heating the element to be heated.

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Similarly with respect to claims 40-41, wherein the core elements are substantial U-shaped in one radial cross-section; and wherein the core elements are substantial E-shaped in one radial cross-section are known in the art. Hibino et al., for example, teaches U-shaped core 60 (fig. 31) and E-shaped core 60 (fig. 30) (col. 4, lines 39-42). Hibino et al. further teaches such a configuration provides a means to permit the attainment of an especially high thermal efficiency while also preventing substantial noise and vibration due to a substantial reduction in the electromagnetic forces applied to the vessel (col. 1, lines 65-68).

Therefore, it would have been obvious to one of ordinary skill in the art to modify Schroeder with wherein the winding core includes a plurality of separate core elements of Iguchi in order to provide a low-frequency electromagnetic induction heater which operates stably and safely due to inhibition of electromagnetic vibration by continuously attracting a heating the element to be heated. Similarly, it would have been obvious to one of ordinary skill in the art to modify Chen et al. in view of Iguchi with wherein the core elements are substantial U-shaped in one radial cross-section; and wherein the core elements are substantial E-shaped in one radial cross-section of Hibino et al. in order to permit the attainment of an especially high thermal efficiency while also preventing substantial noise and vibration due to a substantial reduction in the electromagnetic forces applied to the vessel.

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17. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schroeder (US 3530499) in view of Iguchi (US 5053593) as applied to claims 38-42, and 44 above, and further in view of Akel et al. (US 6498325 B1).

Schroeder in view of Iguchi disclose all of the limitations of the claimed invention, except for wherein the retaining includes a printed circuit board.

However, wherein the retaining includes a printed circuit board is known in the art. Akel et al., for example, teaches a printed circuit board 105 (fig. 9) (col. 5, lines 53 – col. 6, lines 17; col.10, lines 56 – col. 11, lines 32). Akel et al. further teaches such a configuration provides a means to facilitate manufacture of the induction-heated cooker hobs and improve the inductors modular nature at the stage when they are made (col. 5, lines 53-55). It would have been obvious to one of ordinary skill in the art to modify Schroeder in view of Iguchi with wherein the retaining includes a printed circuit board of Akel et al. in order to provide a means to facilitate manufacture of the induction-heated cooker hobs and improve the inductors modular nature at the stage when they are made.

18. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schroeder (US 3530499) in view of Akel et al. (US 6498325 B1).

Regarding claim 45, Schroeder discloses a device for transmitting energy to a device for heating food by means of induction (abstract), comprising: a primary winding 14 (fig. 4) formed from a current conductor and connected to a voltage source L1/L2 (fig. 4); and a winding core 13 (fig. 4) located inside the primary winding 14 (fig. 4).

Schroeder discloses all of the limitations of the claimed invention as set forth above, except for wherein the primary winding is arranged on a printed circuit board.

However, wherein the primary winding is arranged on a printed circuit board is known in the art. Akel et al., for example, teaches a printed circuit board 105 (fig. 9) (col. 5, lines 53 – col. 6, lines 17; col.10, lines 56 – col. 11, lines 32). Akel et al. further teaches such a configuration provides a means to facilitate manufacture of the induction-heated cooker hobs and improve the inductors modular nature at the stage when they are made (col. 5, lines 53-55). It would have been obvious to one of ordinary skill in the art to modify Schroeder with wherein the primary winding is arranged on a printed circuit board of Akel et al. in order to provide a means to facilitate manufacture of the induction-heated cooker hobs and improve the inductors modular nature at the stage when they are made.

19. Claims 47-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schroeder (US 3530499) in view of Iguchi (US 5053593) as applied to claims 38-42, and 44 above, and further in view of Ose et al. (US Pub. No. US 20010019048 A1).

Regarding claims 47-49, Schroeder in view of Iguchi discloses all of the limitations of the claimed invention, except for wherein the winding core has a first number of the core elements, the heating element includes the a second number of heating conductors as and the second number equals the first number; wherein at least two heating conductors are arranged substantially symmetrically with respect to one another and in a substantially circular heating area; and wherein the heating conductors

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are arranged in a substantially circular heating area and each of the heating conductors is arranged substantially uniformly distributed in a piece-of-cake-shaped segment.

However, wherein the winding core has a first number of the core elements, the heating element includes the a second number of heating conductors as and the second number equals the first number; wherein at least two heating conductors are arranged substantially symmetrically with respect to one another and in a substantially circular heating area; and wherein the heating conductors are arranged in a substantially circular heating area and each of the heating conductors is arranged substantially uniformly distributed in a piece-of-cake-shaped segment are known in the art. Ose et al., for example, teaches the heating element includes the a second number of heating conductors 158 (fig. 10, i.e. six of them) as and the second number 158 (fig. 10, i.e. six of them) equals the first number (i.e. six core elements of Iguchi); wherein at least two heating conductors 158 (fig. 10, i.e. six of them) are arranged substantially symmetrically with respect to one another and in a substantially circular heating area (as seen in figure 10); and wherein the heating conductors 158 (fig. 10, i.e. six of them) are arranged in a substantially circular heating area and each of the heating conductors is arranged substantially uniformly distributed in a piece-of-cake-shaped segment (as see in figure 10, the heating conductors (158) are arranged substantially symmetrically with respect to one another and in a substantially circular heating area (11)) (abstract; see figure 10; para. 0010, 0090-0095). Ose et al. further teaches such a configuration provides a means to achieve a heating conductor which is defined with good control of the heatup characteristic (para. 0023). It would have been obvious to one of ordinary

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skill in the art to modify Schroeder in view of Iguchi with the features above of Ose et al. in order to achieve a heating conductor which is defined with good control of the heatup characteristic.

20. Claim 51 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schroeder (US 3530499) in view of Hibino et al. (US 3928744).

Regarding claim 51, Schroeder discloses a device for transmitting energy to a device for heating food by means of induction (abstract), comprising: a primary winding 14 (fig. 4) formed from a current conductor and connected to a voltage source L1/L2 (fig. 4); and a winding core 13 (fig. 4) having an outer wall, an inner wall (as seen in figure 4, the outer and inner walls of the core (13) are not labeled), and a base (i.e. the bottom of the core (13), not labeled) connecting the outer wall and the inner wall such that the outer wall, the inner wall and the base form a trough (i.e. where the coil (14) wraps around the middle of a U-shaped core (13)) in which the primary winding 14 (fig. 4) is positioned.

Schroeder discloses all of the limitations of the claimed invention as set forth above, except for wherein the outer wall and the inner wall are substantially circular and are arranged concentrically.

However, wherein the outer wall and the inner wall are substantially circular and are arranged concentrically is known in the art. Hibino et al., for example, teaches wherein the outer wall and the inner wall are substantially circular and are arranged concentrically (as seen either in figures 22 or 32, the outer and inner walls of the core

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(60), not labeled) are substantially circular and are arranged concentrically. In addition as seen in figure 22, there are spaced between the magnetic poles which allow the coils (70) to wrap around each pole. These spacing apart are considered a channel or a trough for coil (70) to position). Hibino et al. further teaches such a configuration provides a means to permit the attainment of an especially high thermal efficiency while also preventing substantial noise and vibration due to a substantial reduction in the electromagnetic forces applied to the vessel (col. 1, lines 65-68). It would have been obvious to one of ordinary skill in the art to modify Schroeder with wherein the outer wall and the inner wall are substantially circular and are arranged concentrically of Hibino et al. in order to permit the attainment of an especially high thermal efficiency while also preventing substantial noise and vibration due to a substantial reduction in the electromagnetic forces applied to the vessel.

Conclusion

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KET D. DANG whose telephone number is (571) 270-7827. The examiner can normally be reached on Monday - Friday, 7:30 - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoang Tu can be reached on (571) 272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KET D DANG/
Examiner, Art Unit 3742
April 15, 2011

/Henry Yuen/
Supervisory Patent Examiner,
TC 3700